TD

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/593,793	06/13/2000	Jiangchun Xu	210121.427C15	5630

500 7590 06/02/2006

SEED INTELLECTUAL PROPERTY LAW GROUP PLLC
701 FIFTH AVE
SUITE 6300
SEATTLE, WA 98104-7092

EXAMINER	
BLANCHARD, DAVID J	

ART UNIT	PAPER NUMBER
1643	

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/593,793	XU ET AL.	
	Examiner	Art Unit	
	David J. Blanchard	1643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19,22,61 and 63-65* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19,22,61 and 63-65* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Exhibit A*.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03 April 2006 has been entered.

2. Claims 1-18, 20-21, 23-60 and 62 are cancelled.

Claim 64 has been amended.

2. Claims 19, 22, 61 and 63-65 are pending and under examination.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. This Office Action contains New Grounds of Rejections.

Objections/Rejections Withdrawn

5. The rejection of claims 19, 22, 61 and 63 under 35 U.S.C. 103(a) as being unpatentable over Billing-Mendel et al (U.S. Patent 6,130,043, priority to 5/2/1997, Ids reference AC filed 1/24/2003) as evidenced by the instant disclosure in view of Hauser et al (U.S. Patent 5,776,468, 102(e) date 2/12/1996) and Ladd et al (U.S. Patent 5,759,551, 102(e) date 12/26/1995) is withdrawn in view of applicant's arguments and in view of the new grounds of rejections set forth below.

6. The rejection of claims 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billing-Mendel et al (U.S. Patent 6,130,043, 5/2/1997, Ids reference AC filed 1/24/2003) in view of Mincheff et al (U.S. Patent 6,387,888 B1, 9/30/1998) and Salgaller et al (Prostate, 35(2):144-151, May 1998) is withdrawn in view of applicant's arguments and in view of the new grounds of rejections set forth below.

Priority

7. In the response filed 7/19/2004, Applicant has identified that instantly claimed residues 367-375 of SEQ ID NO:113 and the disclosure of this epitope sequence was first made by Applicant's in USSN 09/232,149, filed 1/15/99, now U.S. Patent 6,465,611. Consistent with this, Applicant has amended the CROSS REFERENCE TO RELATED APPLICATIONS on the first line of the specification such that USSN 09/232,149, filed 1/15/1999 is the earliest application to which priority is now claimed. Accordingly, the priority date of the instant claims is deemed to be that of USSN 09/232,149, i.e., 1/15/1999.

New Grounds of Rejections

8. Claims 61, 19, 22 and 63 are rejected under 35 U.S.C. 103(a) as being obvious over Momin et al (U.S. Patent 6,146,632, 102(e) date 7/2/1996) and Billing-Mendel et al (U.S. Patent 6,130,043, field 5/1/1998, Ids reference AC filed 1/24/2003) and Apostolopoulos et al (Vaccine, 14(9):930-938, 1996).

The claims are drawn to an immunogenic composition comprising an immunostimulant which induces a predominantly Th1-type immune response and a polypeptide comprising amino acids 367-375 of SEQ ID NO:113 and stimulates a human cytotoxic T lymphocyte response specific for SEQ ID NO:113, wherein the immunostimulant is selected from an adjuvant, monophosphoryl lipid A, 3-de-O-acylated monophosphoryl lipid A or saponins and a method for stimulating an immune response in a patient comprising administering said immunogenic composition to a patient. Applicant is reminded that "comprising" is inclusive or open-ended and does not exclude additional, unrecited elements, i.e., the claims are not limited to amino acids 367-375 of SEQ ID NO:113. See MPEP 2111.03.

Momin et al teach anti-cancer compositions comprising a cancer antigen and 3 de-acylated monophosphoryl lipid A (3 D-MPL) and QS21 (saponin), which are preferential stimulators of IgG2a production and a Th1 cell response, where the induction of IgG2a is correlated with a cell-mediated immune response (see entire document, particularly column 1, lines 35-41 and column 2, lines 32-35). Momin et al do not specifically teach an immunogenic composition comprising an immunostimulant which induces a predominantly Th1-type immune response and a polypeptide comprising amino acids 367-375 of SEQ ID NO:113 and stimulates a human cytotoxic T lymphocyte response specific for SEQ ID NO:113, wherein the immunostimulant is selected from an adjuvant, monophosphoryl lipid A, 3-de-O-acylated monophosphoryl lipid A or saponins, or a method for stimulating an immune response in a patient comprising administering said immunogenic composition to a patient. These

deficiencies are made up for in the teachings of Billing-Mendel et al and Apostolopoulos et al.

Billing-Mendel et al teach a polypeptide of 242 amino acids (SEQ ID NO:36) expressed in prostate cancer tissue, which shares 100% amino acid identity with residues 299-529 of the instantly claimed SEQ ID NO:113 (see Exhibit A attached to the back of this office action). Thus, Billing-Mendel et al teach a polypeptide (sequence 36) that "comprises" residues 367-375 of SEQ ID NO:113 (see Exhibit A).

Apostolopoulos et al teach that induction of a humoral immune response (i.e., Th2 response) gives poor tumor protection accompanied by little cellular immunity (i.e., TH1 response), however, when a cellular immune response is induced, this results in significant tumor protection, cytotoxic T lymphocytes and little antibody production (see abstract and page 930, right column). Apostolopoulos et al state "However, in immunotherapy studies mice immunized with either natural mucin (HMFG) or a 20mer synthetic peptide from the VTNR repeat or a MUCI fusion protein (FP), and challenged with MUC1+3T3 cells, had poor tumor protection, significant antibody titers were produced, a detectable CD4+ DTH, but no CTL were found." (see page 930, right column).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the claimed invention was made to have produced an immunogenic composition comprising the Th1-inducing immunostimulant 3 D-MPL and QS21, and the prostate cancer antigen of SEQ ID NO:36 (i.e., a polypeptide comprising residues 367-375 of SEQ ID NO:113) as taught by Billing-Mendel and a method of stimulating an immune

response in a patient comprising administering said immunogenic composition for therapeutic benefit of prostate cancer.

One of ordinary skill in the art would have been motivated to and had a reasonable expectation of success at the time the invention was made to have produced an immunogenic composition comprising the Th1-inducing immunostimulant 3 D-MPL and QS21, and the prostate cancer antigen of SEQ ID NO:36 (i.e., a polypeptide comprising residues 367-375 of SEQ ID NO:113) as taught by Billing-Mendel and a method of stimulating an immune response in a patient comprising administering said immunogenic composition for therapeutic benefit of prostate cancer in view of Momin et al and Billing-Mendel et al and Apostolopoulos et al because Momin et al teach anti-cancer compositions comprising a cancer antigen and 3 D-MPL and QS21, which are preferential stimulators of IgG2a production and a Th1 cell response, where the induction of IgG2a is correlated with a cell-mediated immune response and Billing-Mendel et al teach the polypeptide of SEQ ID NO:36 expressed in prostate cancer tissue, which shares 100% amino acid identity with residues 299-529 of the instantly claimed SEQ ID NO:113 and Apostolopoulos et al teach that induction of a humoral immune response (i.e., Th2 response) gives poor tumor protection accompanied by little cellular immunity (i.e., Th1 response), however, when a cellular immune response is induced, this results in significant tumor protection, cytotoxic T lymphocytes and little antibody production. Therefore, one of ordinary skill in the art would have been motivated to modify the immunogenic composition of Momin et al with the prostate cancer antigen of Billing-Mendel et al and administer the immunogenic composition to

prostate cancer patients for inducing a Th1-type immune response since induction of a Th2-type immune response or antibody response gives poor tumor protection and little cellular immunity, whereas induction of a cellular or Th1-type immune response results in significant tumor protection and little antibody production. Thus, there would be an advantage to inducing a Th1-type immune response in prostate cancer patients by administering an immunogenic composition comprising the prostate cancer antigen of SEQ ID NO:36 and 3 D-MPL and QS21. The strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. *In re Sernaker*, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (Fed. Cir. 1983). Thus, it would have been *prima facie* obvious to one skilled in the art to have produced an immunogenic composition comprising the Th1-inducing immunostimulant 3 D-MPL and QS21, and the prostate cancer antigen of SEQ ID NO:36 (i.e., a polypeptide comprising residues 367-375 of SEQ ID NO:113) as taught by Billing-Mendel and a method of stimulating an immune response in a patient comprising administering said immunogenic composition for therapeutic benefit of prostate cancer in view of Momin et al and Billing-Mendel et al and Apostolopoulos et al.

Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

9. Claims 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Billing-Mendel et al (U.S. Patent 6,130,043, 5/2/1997, Ids reference AC filed 1/24/2003) in view of Mincheff et al (U.S. Patent 6,387,888 B1, 9/30/1998, cited on PTO-892 mailed 9/2/04) and Apostolopoulos et al (Vaccine, 14(9):930-938, 1996).

The claims are drawn to an immunogenic composition comprising an immunostimulant which induces a predominantly Th1-type immune response and an antigen-presenting cell that expresses a polypeptide that comprises the T-cell epitope of amino acid residues 367-375 of SEQ ID NO:113 and wherein the polypeptide stimulates a human cytotoxic T lymphocyte response specific for SEQ ID NO:113 and a method of stimulating an immune response in a patient comprising administering said immunogenic composition.

Billing-Mendel et al have been described supra. Billing-Mendel et al do not specifically teach an immunogenic composition comprising an immunostimulant which induces a predominantly Th1-type immune response and an antigen-presenting cell that expresses a polypeptide that comprises the T-cell epitope of amino acid residues 367-375 of SEQ ID NO:113 and wherein the polypeptide stimulates a human cytotoxic T lymphocyte response specific for SEQ ID NO:113 and a method of stimulating an immune response in a patient comprising administering said immunogenic composition. These deficiencies are made up for in the teachings of Mincheff et al and Apostolopoulos et al.

Mincheff et al teach antigen-presenting cells expressing a prostate cancer antigen following the introduction of DNA or RNA encoding said prostate cancer antigen

(see columns 1-2). Mincheff et al also teach a method of treating prostate cancer patients, wherein dendritic cells are transfected with a nucleic acid encoding a prostate cancer antigen and infused back into the prostate cancer patient where they stimulate autologous T-cells (see column 2).

Apostolopoulos et al have been described supra.

It would have been prima facie obvious to one of ordinary skill in the art at the time the claimed invention was made to have produced an immunogenic composition comprising an immunostimulant which induces predominantly Th1-type immune response and antigen-presenting cells that express SEQ ID NO:36 (i.e., a polypeptide comprising residues 367-375 of SEQ ID NO:113) and a method of stimulating an immune response in a patient comprising administering said immunogenic composition for therapeutic benefit of prostate cancer.

One of ordinary skill in the art would have been motivated to and had a reasonable expectation of success to have produced an immunogenic composition comprising an immunostimulant which induces predominantly Th1-type immune response and antigen-presenting cells that express SEQ ID NO:36 (i.e., a polypeptide comprising residues 367-375 of SEQ ID NO:113) and a method of stimulating an immune response in a patient comprising administering said immunogenic composition for therapeutic benefit of prostate cancer in view of Billing-Mendel et al and Mincheff et al and Apostolopoulos et al because Billing-Mendel et al teach a nucleic acid (i.e., SEQ ID NO;16) encoding a prostate cancer antigen comprising residues 367-375 of SEQ ID NO:113 (i.e., SEQ ID NO:36) and Mincheff et al teach a method of treating prostate

cancer patients with dendritic cells transfected with a nucleic acid encoding a prostate cancer antigen where they stimulate autologous T cells and Apostolopoulos et al teach that induction of a humoral or antibody immune response (i.e., Th2 response) gives poor tumor protection accompanied by little cellular immunity (i.e.,Th1 response), however, when a cellular immune response is induced, this results in significant tumor protection, cytotoxic T lymphocytes and little antibody production. Therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to have produced an immunogenic composition comprising dendritic cells transfected with the nucleic acid (SEQ ID NO:16) encoding the prostate cancer antigen of SEQ ID NO:36 of Billing-Mendel, and an immunostimulant which induces a predominantly Th1-type immune response and administer said immunogenic composition for the treatment of prostate cancer patients since the induction of an antibody or Th2-type immune response gives poor tumor protection accompanied by little cellular immunity (i.e.,Th1 response), however, when a cellular or Th1-type immune response is induced, this results in significant tumor protection, cytotoxic T lymphocytes and little antibody production. Thus, there would be an advantage to combine dendritic cells expressing the prostate cancer antigen of SEQ ID NO:36 with an immunostimulant which induces a predominantly Th1-type immune response for immunotherapy in prostate cancer patients. Thus, it would have been *prima facie* obvious to one skilled in the art at the time the invention was made to have produced an immunogenic composition comprising an immunostimulant which induces predominantly Th1-type immune response and antigen-presenting cells that express SEQ ID NO:36 (i.e., a polypeptide

comprising residues 367-375 of SEQ ID NO:113) and a method of stimulating an immune response in a patient comprising administering said immunogenic composition for therapeutic benefit of prostate cancer in view of Billing-Mendel et al and Mincheff et al and Apostolopoulos et al.

Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references.

Conclusions

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Blanchard whose telephone number is (571) 272-0827. The examiner can normally be reached at Monday through Friday from 8:00 AM to 6:00 PM, with alternate Fridays off. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms, can be reached at (571) 272-0832. The official fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Respectfully,
David J. Blanchard
571-272-0827

SHEELA HUFF
PRIMARY EXAMINER

Exhibit A

```
RESULT 7
US-09-071-710-36
; Sequence 36, Application US/09071710
; Patent No. 6130043
; GENERAL INFORMATION:
;   APPLICANT:  BILLING-MEDEL, PATRICIA
;   APPLICANT:  COHEN, MAURICE
;   APPLICANT:  COLPITTS, TRACEY L.
;   APPLICANT:  FRIEDMAN, PAULA N.
;   APPLICANT:  GORDON, JULIAN
;   APPLICANT:  GRANADOS, EDWARD N.
;   APPLICANT:  HODGES, STEVEN C.
;   APPLICANT:  KLASS, MICHAEL R.
;   APPLICANT:  KRATOCHVIL, JON D.
;   APPLICANT:  ROBERTS-RAPP, LISA
;   APPLICANT:  RUSSELL, JOHN C.
;   APPLICANT:  STROUPE, STEPHEN D.
;   TITLE OF INVENTION:  REAGENTS AND METHODS USEFUL
;   TITLE OF INVENTION:  FOR DETECTING DISEASES OF THE PROSTATE
;   NUMBER OF SEQUENCES:  41
;   CORRESPONDENCE ADDRESS:
;     ADDRESSEE:  Abbott Laboratories
;     STREET:  100 Abbott Park Road
;     CITY:  Abbott Park
;     STATE:  IL
;     COUNTRY:  USA
;     ZIP:  60064-3500
;   COMPUTER READABLE FORM:
;     MEDIUM TYPE:  Diskette
;     COMPUTER:  IBM Compatible
;     OPERATING SYSTEM:  DOS
;     SOFTWARE:  FastSEQ for Windows Version 2.0
;   CURRENT APPLICATION DATA:
;     APPLICATION NUMBER:  US/09/071,710
;     FILING DATE:
;     CLASSIFICATION:
;   PRIOR APPLICATION DATA:
;     APPLICATION NUMBER:  08/850,713



;     TELEPHONE:  847/935-1729
;     TELEFAX:  847/938-2623
;     TELEX:
;  INFORMATION FOR SEQ ID NO:  36:
;    SEQUENCE CHARACTERISTICS:
;     LENGTH:  255 amino acids
;     TYPE:  amino acid
;     STRANDEDNESS:  single
;     TOPOLOGY:  linear
;   MOLECULE TYPE:  No. 6130043e
US-09-071-710-36

  Query Match          45.0%;  Score 1287;  DB 3;  Length 255;
  Best Local Similarity  100.0%;  Pred. No. 1.6e-117;
  Matches  255;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

Qy       299 GLYQGVPRAEPGTEARRHYDEGVRMGSLGLFLQCAISLVPSLVMDRLVQRPGTRAVYLAS 358
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         1 GLYQGVPRAEPGTEARRHYDEGVRMGSLGLFLQCAISLVPSLVMDRLVQRPGTRAVYLAS 60

Qy       359 VAAPPVAAGATCLSHSVAVVTASAALTGPTPSALQILPYTLASLYHREKQVPLPKYRGDT 418
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        61 VAAPPVAAGATCLSHSVAVVTASAALTGPTPSALQILPYTLASLYHREKQVPLPKYRGDT 120

Qy       419 GGASSEDSLMTSPLPGPKPGAPPPNGHVGAGGSGLLPPPPALCGASACDVSVRVVVGEPT 478
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       121 GGASSEDSLMTSPLPGPKPGAPPPNGHVGAGGSGLLPPPPALCGASACDVSVRVVVGEPT 180

Qy       479 EARVVPGRGICLDLAILDSAPLLSQVAPSLFMGSIVQLSQSVTAYMVSAAGLGLVAIYFA 538
            ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       181 EARVVPGRGICLDLAILDSAPLLSQVAPSLFMGSIVQLSQSVTAYMVSAAGLGLVAIYFA 240

Qy       539 TQVVFDKSDLAKYSA 553
            |||||||||||||||
Db       241 TQVVFDKSDLAKYSA 255
```